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A REVIEW OF THE FIRST BOOK ON THE DISEASES
OF THE EYE, BY BENVENUTUS GRASSUS, 1474.
EXHIBITION OF THREE OTHER FIFTEENTH CEN-
TURY MONOGRAPHS: (a) THE FIRST MEDICAL
DICTIONARY, *SYNONYMA SIMONIS GENUENSIS*,
1473; (b) THE FIRST BOOK ON DIET, BY ISAAC, 1487,
(c) THE SECOND EDITION OF THE FIRST BOOK ON
DISEASES OF CHILDREN, BY PAULUS BAGELLAR-
DUS, 1487.*

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BOOKS printed in the fifteenth century are called *incunabula*, a quite classical Latin noun, of the neuter gender, used only in the plural. We have, therefore, been obliged to invent a singular noun, *incunabulum*, in order to make the term applicable not only to books of the fifteenth century in general, but also to a single specimen of that period. This fact is alone sufficient to prove that the word had no bibliographical meaning attached to it by the Romans. The original meaning of the word was "swaddling-clothes" and, by transference, it came to signify "infancy," "childhood," and "beginning" or "origin." *Ab incunabulis*, literally "from [the time of] swaddling-clothes," is used by both Livy and Cicero to signify either "from childhood" or "from the beginning." I have been unable to ascertain at what date the word was first applied to fifteenth century books and I would be glad to be enlightened upon the subject. Without further discussion of the etymology of the word, I will say a few words concerning its proper meaning. We naturally turn to a dictionary for the proper definition of a word and I will quote two dictionaries, universally recognized as authorities, in both of which the definition of the word *incunabula* is incorrect. One is the dictionary of the French Academy and the other is the Century Dictionary. The former gives as the definition of *incunabula*: "des livres imprimés antérieurement à l'an 1500" ("books printed before the year 1500"), meaning, undoubtedly, to signify books printed in the fifteenth century. Now this is a mistake, for the year 1500 was included in the fifteenth

*Read before the Johns Hopkins Hospital Historical Club, at Baltimore, Md., December 12, 1904.

century just as the year 1900 was included in the nineteenth. The Century Dictionary makes the same mistake in defining *incunabula* as "books printed before the year 1500," and then proceeds to stultify itself still further by quoting a sentence containing the word. This sentence, or rather phrase, reads: "including such rare works as 430 incunabula, from A. D. 1469 to 1510!" It is evident that the bibliographer had better leave dictionaries alone. Hain, the greatest friend of the bibliographer includes in his marvelous *Repertorium Bibliographicum* books printed before and also those bearing the imprint of the year 1500, and, in my opinion, such books, and such alone, should be ranked as incunabula.

Ordinary books are intended to be read, but incunabula are not ordinary books. As a rule, the collector of incunabula limits his reading of these books to the first and last sentences which serve to identify them and which are invariably cited in bibliographical works and catalogues. The last lines are relatively the more important for in them are usually found the printer's name and the date, although there are books without either. I do not mean to say that no one, besides myself, has read a fifteenth century book from beginning to end, but I believe that very few physicians have done so. I plead guilty to having literally read several such books but, like the *corpus delicti* of the unfortunate mother, they were very small. There are difficulties in the way of reading such books besides those of the dead language in which they are written. I refer to the abbreviations, the species of shorthand employed by the scribes of the fifteenth century to save parchment and to save time. I will not give you any examples of them for two reasons; *first*, because I believe that many of you are more or less acquainted with them, and, *second*, because they are all to be found in treatises on paleography, of which the best that I have seen is the one by Maurice Prou* I will merely state that, of these numerous abbreviations and contractions, only one has survived in the handwriting of our day, *i. e.*, the contraction of the word "and" (&), which is "et" abbreviated.

In this paper I do not propose to give a complete bibliographical or technical description of the four fifteenth century monographs I am about to exhibit. Such descriptions may be found in Hain's *Repertorium*, a copy of which should be in every large library. My object is merely to indicate the principal features of these rare books and especially those that are likely to interest the members of this society.

**Manuel de Paleographie*. Paris, Alphonse Picard, Éditeur, 1892.

Seniores priores! I will take the books in their chronological order, giving a brief description of each, and conclude with a review of one of them, *viz.*, the first monograph on the diseases of the eye.

The oldest of the four, and the oldest *dated* book in the Library of The College of Physicians of Philadelphia, is the “Synonyms of Simon of Genoa” (“*Synonyma Simonis Genuensis*”). It is the first edition of the first medical dictionary and was printed by Antonius Zarotus at Milan in 1473. Simon of Genoa was a physician to Pope Nicholas IV. in the year 1288, and was also his chaplain. It is evident, therefore, that he never lived to see his work in print. According to Eloy,* it is to be found in manuscript, in the Library of Florence.

The word “synonym,” as we now understand it, is not applicable to this book. A collection of synonymis, as we now use the term, is a collection of words of the same or closely similar meaning. It is evident that the word had a wider significance in the fifteenth century.

The College of Physicians obtained this valuable book from the collection of the late Dr. Stockton Hough who, as appears from a note in his handwriting on the fly-leaf, paid eleven dollars for it. It is a superb copy, in perfect preservation, and would probably bring a much larger sum at the present time.

The next book that I now show you is the first edition of the first book on the diseases of the eye, which is numbered 7869 in Hain’s *Repertorium*. The author’s patronymic is variously written Grapheus, Grassus, and Crassus, and his prænomen is Benvenutus. The title of the work is “*De oculis eorumque egritudinibus et curis*.” It is printed in Roman characters, contains thirty-five leaves (seventy pages), twenty-five lines to the page, and concludes with the following abbreviations in which is contained the most important part of the book, from a bibliographical standpoint, its date: “Sever. Ferrar. F. F. iiiii.” Those abbreviations are interpreted in two ways: (1) *Severinus Ferrariensis finit Ferraiæ [M]PCCCCLX[X]III*; or (2) *Severinus Ferrariensis feliciter finit [M]PCCCCLXX] III*.

This, book like the *Synonyma*, was obtained with the library of the late Dr. Stockton Hough and contains, on the fly-leaf, some interesting notes in the handwriting of that well-known collector.

*Eloy (N. F. G.). *Dictionnaire Historique de la Médecine. Mons,* 1778. Tome 4, p. 278.

Among other things, he tells us that the book is of "extreme rarity" and that it cost him one hundred and ten francs, which he considered a very reasonable price. He also comments upon the peculiar manner in which the printer, *Severinus Ferrariensis*, was in the habit of printing the dates of the books that issued from his press, IIII indicating 1474, etc., and he refers to an earlier book of the same printer, a work by *Fossambruno* (Hain, No. 7310), in which II signifies 1472. Concerning the author, nothing appears to be known beyond the fact, indicated by his name *Benvenutus Grassus Hierosolimitanus*, that he was a native of Jerusalem. This fact also appears in a second edition of this same book, printed at Venice by *Octavianus Scotus* in 1497, in which the author is styled *Benvenutus Grapheus de Jerusalem*.

I now show you, to quote the words written on the fly-leaf by the late Dr. Stockton Hough from whose collection this book also was obtained, "an exceedingly rare book, the first edition of the first book printed on diet." It is numbered 9267 in Hain's *Repertorium*. The author's name is Isaac and it was printed by *Mattheus Cerdonis*, of *Windischgretz*, who completed his part of the work on March 23, 1487. The first two pages contain an index, or rather table of contents, arranged with reference to the pages on which the various articles of diet are described and not in alphabetical order. I have been unable to ascertain anything definite concerning the author. A certain Isaac who lived in the tenth century* and wrote a book *De universalibus et particularibus dictis*" was probably the author of this work.

The last book I have to exhibit this evening is the second edition of the first monograph on the diseases of children. Its author is *Paulus Bagellardus a Flumine*. It was printed by *Mattheus of Windischgretz* on Nov. 10, 1487, and it corresponds to No 2245 in Hain's *Repertorium*. Its title is "*De infantium ægritudinibus et remediis*." A first edition of the same book was printed in 1472 (Hain, No. 2244) and was priced at 300 marks in a catalogue of the year 1898.

Without stopping to call attention to the numerous interesting features of this little book of forty-four pages, I will pass to a somewhat detailed review of the work by *Benvenutus Grassus* on the diseases of the eye.

After a brief introduction, which is chiefly self-laudatory, he begins by describing the situation and anatomy of the eye which, he

*See: *Haller's Bibliotheca Medicinæ Practicæ*, Vol. I, p. 348.

says, according to Johannutius, contains seven tunics, *viz.*, the retina, secundina, sclerotica, aranca, uvea, cornea and conjunctiva. According to the same authority, also, the colors of the eye are four, *viz.*, black, *subalbidus*, *varius* and *glaucus*. "But, I, Benvenutus say that the ocular tunics are but two." The first he calls *salvatrrix* "quia salvat totum oculum," and retains the humors; the second he calls *discolorata* because it has no color ("quia non est color in ea".) He then goes on to say that the eye is devoid of color *per se*, such color as it appears to have being due to the exercise of vision and the clarity of the crystalline humor. He makes the color of the eye to depend also upon the position of the humors: Thus, the eyes in which the humors are deep seated ("illi qui habent humores in profunditate") appear black, and their happy possessors see better than others until the age of thirty when their sight deteriorates. Again, those in whom the humors are central ("in mediatate") have eyes which appear moderately black ("mediocriter nigri") and enjoy good vision from childhood until old age, but they are liable to ophthalmia and "*paniculi*," finally, those whose humors are close to the tunics have "*varius*" eyes and do not see well either in youth or old age. Such eyes secrete tears abundantly and have red eyelids because the visible spirits in coming along the concave nerves are quickly disintegrated, "et refugiescunt extra." Similar incomprehensible explanations are given of the superior vision of two other classes of eyes.

DE CATHARATIS OCULORUM.

I am unable to explain why Grassus employs the word *catharata* instead of *cataracta*, for in the fifteenth century dictionary which I have already shown you this evening the word *cataracta* is to be found and is thus defined: "cataractam dicunt latini aquam in oculo confirmatum prohibientem visum," etc.

According to Grassus there are seven varieties of cataract, of which four are curable and three incurable. The first of the curable varieties is white, like purified lime. The second is also white, "et assimilatur colori celestrino," proceeds from the stomach and is caused by bad food from which arises an evil vapor that ascends to the brain and so gives rise to cataract. The third species is white with a bluish tinge ("assimilatur colori ceruleo") and is caused by great pain in the head, such as is caused by migraine ("sicut est emigraneus"); sometimes also by excessive cold and privation, shedding of tears and wakefulness. The

fourth species is of a lemon tint and is due to excessive eating and drinking. It is often generated from a melancholy humor.

DE CURATIONE CATHARATARUM.

Grassus begins this section by stating emphatically that no variety of cataract can be cured until, as we say nowadays, it is "ripe," or, to use his own words, "nisi prius compleantur et bene firmentur." The method of determining the ripeness of a cataract is not derived from its appearance but from the fact that the patient is absolutely blind ("patiens ab illa hora in antea non videt claritatem solis in via, nec in lumine lucem, nec in sero nec de nocte.") This condition is not to be cured, as some ignorant physicians believe, by purgatives or powders or collyria or electuaries, because it is seated "subtus tunicas oculorum." The Saracens and Arabians call the disease *linzaret* and the physicians of Salernum call it *catharatam* because it is placed before the light of the eyes, "inter tunicas et lumen oculorum."

DE CURA EARUM.

A purgative is given, consisting of pills compounded after a private formula ("cum pillulis hierosolimitanis a nobis compositis") or aloes. On the following day the patient is placed astride of a stool ("velut si equitaret") and the operator places himself opposite. The sound eye is closed by the patient, presumably with his hand upon it. With one hand, the operator raises the lid of the diseased eye, while with the other, he holds a silver needle with which he perforates the tunic of the eye, rotating the needle continuously and pushing it onward until it encounters the putrefied water ("illam aquam putrefactam") which the Saracens and Arabians call *linzaret* and we *catharatam*. The point of introduction of the needle is "in parte lacrimalis minoris." The needle having encountered the lens, the latter is forced downward and held there while the operator repeats four paternosters. The point of the needle is then raised but not withdrawn and if the lens returns to its former position it is again pushed downward and outward in the direction of the ear ("versus auriculam.") When the lens is firmly fixed in the position in which it has been thrust, the needle is withdrawn in the line along which it was introduced, the surgeon at the same time rotating it in both directions with his fingers. The needle having been extracted, the eye of the patient is closed and presumably bandaged, although not so stated. This, however may be inferred from the Latin: "facias

retinire oculum pacientis clausum." The patient is then placed in bed, in a darkened room, with both eyes closed, and the treatment is continued until the eighth day. During this period the eyes are smeared with white of egg, twice daily and twice during the night, and the diet is composed of soft-boiled (or raw) eggs ("ova sorbilia") and bread. If the patient is young he should drink water, but if old, wine well diluted. "Many," says Grassus, "recommend the flesh of chickens, but we object to it because it contains too much nourishment and may determine an afflux of blood to the eyes." On the eighth or ninth day after the operation, the patient, after making the sign of the cross, may rise from bed and wash himself with cold water. In this manner all curable cataracts are cured, whether they be *calcinea*, *celestina*, *cerulea* or *citrina*. And if any one should attempt to cure a cataract in any other manner than that described in this book he is an ignoramus.

The author then proceeds to compare the results of the operation in the four varieties of curable cataract. The first, *i. e.*, that which resembles the purest lime ("calx purissima"), is sometimes due to traumatism and is easily cured. If the patient does not regain his vision it is because the humors of the eye are partly dissolved, just as the humors in other parts of the body are dissolved by a blow.

De secunda spetie alba. The prognosis in this variety is most favorable. If the operation is properly performed, those suffering from this kind of cataract will have better vision than the victims of the other three curable varieties. This is because of the abundance of the visible spirit in such eyes ("propter abundantiam spiritus visibilis existentis in oculis").

De tertia spetie. The third variety (*cerulea*) will not do well after operation unless the patient is treated medicinally and dietetically. The medicine recommended is the following electuary:

R. Olibani* 3 ii, gariofali,† nucis muscatæ, nucis Indiæ, gallanghæ,‡ aa 3 i, se castorie boni oc. i. Haec omnia bene pulverizentur et cibilentur et cum melle despumato confitentur."

Of this electuary the patient is to take, in the morning on an empty stomach, a mass the size of a nut ("ad quantitatem nucis") and the same amount again on going to bed. He must also abstain from food that is indigestible or that generates a sanguineous

*Manna.

†Probably caryophilli.

‡Calamus.

humor, such as beef, pork, eels and fungi. He must also abstain from coitus as much as possible ("quantum plus possint") and must never enter a bath. If, however, he insists on bathing, it should be in an infusion of chamomile and other odoriferous herbs.

De quarta specie. The fourth species, which is citron-colored, is the hardest of all and of a round shape. Therefore, when it is fixed with the needle, it is not to be pushed downward because, on account of its hardness and rotundity, it will not remain in that position. It is to be pushed away from the minor lachrymal region ("a parte lacrimalis minoris"), which is done by turning the hand toward the nose.

De prima quæ est incurabilis. Grassus now proceeds to describe what he calls the three varieties of incurable cataract, and it seems evident that in each instance he is mistaken in his diagnosis, grouping under the head of cataract loss of sight from other and, to him, unknown causes. In his description of the first incurable variety, he seems to be confounding optic atrophy and nystagmus with cataract. For example, he states that the first species of incurable cataract is called by the physicians of the School of Salernum "*gutta serena*" and is characterized by a clear black pupil, or if there is a macula, it disappears and the eye becomes clear. The eyes also, he says, are in constant motion, together with the lids, as if they were filled with quicksilver ("ac si essent pleni argento vivo.") He believes this condition to be congenital ("ex vitio materno") and so far as some cases of nystagmus are concerned, he is right. They are born, he says, without sight, and he acknowledges that he has tried in vain to cure them "*cum variis et diversis medicinis.*" Some of them can distinguish night from day and others the figure of a man or other large object. He is most emphatic in his statement that those cases known as *gutta serena* are absolutely incurable, and his explanation, therefore, is correct if we are right in supposing the condition to be optic atrophy. They are incurable, he declares, because the optic nerves are obstructed ("oppilati") and mortified and are beyond the reach of art.

De secunda incurabili. In the description of this variety, Grassus is probably confounding glaucoma with cataract for he says it appears in eyes which are of green color. It is of sudden onset and is caused by frigidity of the brain ("propter magnum frigiditatem cerebri,") by weeping, poverty, vigils, grief, fear, injury to the head, fasting, "et iis similia." Exception may be taken to the

view that this species is glaucoma because of the absence of any reference to the pain which is so characteristic of that disease.

De tertia specie incurabili. The third variety is characterized by an extremely dilated pupil and, apparently, by nothing else: "ita dilatata quod in oculo non appareat circulus aliquis." This variety is absolutely incurable and it is difficult to understand what condition the author is attempting to describe. We may conjecture that it is the terminal stage of glaucoma, the so-called "glaucoma absolutum."

De aliis infirmitatibus accidentibus vel accidenta.

The diseases treated under this heading are caused by four humors, *viz.*, (1) the blood, (2) phlegma, (3) colera, (4) melancholia. Because of an undue amount of blood in body, a certain redness ("rubedo") attacks the eyes, which is attended with a burning sensation and eventually is converted into pruritus. The eyelids become dry to such an extent that the hairs drop out. If this disease continues for the space of one year, it is incurable and in its last stage causes eversion of the lids. Before the patient reaches this stage he may be cured by what Grassus calls his "Jerusalem collyrium" ("collerium hierosolimitanum") :

" Recipe tuciae Alexandrinæ 3 i cum duabus libris boni vini albi et in mortario pistetur in modum salsæ et bene ducatur ita quod bene dissolvatur tota tucia, et postea cum vino ponatur in olla nova et cum eis adjungatur 3 i rosarum ru. et cum predicto vino bulliantur super ignem lentum donec vinum solvatur in duas partes et postea levetur et cum panno lini coletur et ponatur in ampula vitrea et de eo bis in die in oculis instilletur."

With this collyrium Grassus says he has cured "homiines innumerabiles." The "tucia" in the above mentioned prescription was probably *tutia*, *i. e.*, cadmia, "a name applied by the Greeks to zinc ore and also to the impure oxide of zinc that is deposited as a crust on the inside of furnaces in which zinc ores and brass are metallurgically treated.* If, therefore, as seems highly probable, *tucia* is a synonym of *tutia*, the employment of zinc in eye-washes dates, at least, from the fifteenth century.

De obtalmia.

Under ophthalmia, numerous affections, such as the various forms of conjunctivitis, ulcer of the cornea and keratitis, are prob-

*See: Booth's Cyclopaedia of Chemistry.

ably grouped. The symptoms of *obtalmia* are described as severe pain and burning and abundant lachrymation. The cause is said to be plethora. The author well says that ignorant physicians, in treating this disease, add fuel to the fire ("addunt dolorem dolori,") a remark which holds good in the twentieth as well as in the fifteenth century. A predisposing cause of *obtalmia* is found in the season of the year, between the end of August and the end of September, at which time, owing to the variety of fruits consumed, the blood is in a state of plethora ("in quo tempore magis habundat [sic] vel superhabundat sanguis.") That perforation of the cornea might result from what Grassus called *obtalmia* is proved by the statement that it might cause liquefaction of the eyes and their escape from the lids ("aliquando oculi liquefiunt et exeunt cum tota concavitate extra palbebras.") Another proof that he included corneal ulceration under *obtalmia* is found in the fact that among its sequelæ is obscurity of vision, evidently depending from the context, upon corneal opacity.

Incipit tractatus paniculorum.

It is difficult to determine what affections Grassus includes under *paniculus* which he divides into four varieties. Its causes, he says, are improper use of the eyes, and pains in the head. The first variety of *paniculus* is probably granular lids. The disease (*paniculi*) "apparent in oculis in modum granorum millii super tunicam." In many places, Grassus tells us, this affection is called *gutatici*, in others, *pidatellæ* or *pictacollæ*, and in the region of Apulia it is called *carraturæ*. None of these synonyms are contained in the dictionary of Simon of Genoa (1473) which I have shown you this evening.

The second variety of *paniculus* appears in the form of an obscurity ("ad modum calliginis.") Whether he means thereby a subjective obscurity of vision or an objective opacity, is not clearly stated, but he probably intends the latter.

The third variety appears only in one portion of the eye and resembles a flake of snow ("sicut flocum nivis.") He probably means a partial opacity of the cornea.

In the fourth variety of *paniculus* the entire eye appears white ("oculus appetet totus albus, nec aliqua nigredo illi appetet nec de tunica nec de pupilla.") It may be that under these four varieties of *paniculus* Grassus groups the four stages of granular lids when this disease is left to run its course.

De primo paniculo. The cure of the first variety of *paniculus* is to be found in a marvellous ointment invented by Grassus which he calls *unguentum alabastri*. It is composed of shoots or tendrils of blackberry or blackthorn twigs finely pounded in a mortar, to which is added white wine, chamomile, a certain amount of the stone called alabaster, fennel seeds, oil of roses, and wax. These ingredients are pounded together and then boiled until the wine is dissipated. The whites of seven boiled eggs are then added. The ointment is spread on a cloth and applied to the temples, forehead and eyebrows. With this alone, says Grassus, can the first variety of *paniculus* be cured. He then devotes a page to a panegyric upon the marvellous virtues of this ointment, not only in *paniculus* but in all kinds of diseases.

De secundo paniculo. The second variety of *paniculus* is, says Grassus, incurable unless treated early and only then can it be cured by his particular method of treatment. He warns against the attempt to remove it with a razor for this, he says, cannot be done without cutting through the tunics of the eye and permitting the fluids to escape. He also advises against undertaking the treatment of this disease in its incurable stage, for, by so doing, the reputation of the physician may suffer irretrievable damage. In the curable stage ("antiquam induretur") it is to be treated with cauteries applied to the temporal regions and by placing in the eyes a powder called *pulvis nabetis*. This powder, to which wonderful properties are attributed, is obtained "ex zucharo nabete, secundum arabicam linguam; et secundum saracenam linguam et barbaricam, fit ex zucharo gilbel vel zucharum nabet et vocamus eum candos alexandrinos." An ointment composed of four boiled apples pounded in a metal mortar with the white of one egg is then applied to the eye and renewed twice daily. With the help of God, this method will cure *paniculi* in the early stage.

De tertio paniculo. The third variety, that resembling a snow-flake on the cornea, is also treated with cauteries to the temple, and *pulvis nabetis*, and, in addition, with a complex powder made by burning lignum aloes in charcoal to which is added *pulvis nabetis*. This powder is dusted in the eyes twice daily. The eyes are then closed and the ointment and bandage applied as in the treatment of the second variety.

De quarto paniculo. In the treatment of the fourth variety of *paniculus*, the cautery is first applied to the head at the point where the coronal and sagittal sutures unite. The whites of twelve eggs

are then beaten up with a spoon until they become frothy. The froth, after being allowed to partly subside, is removed and in the fluid which remains a rag is steeped and placed over the closed eye. This application is renewed ten times daily and as many times during the night until the patient is well. In this manner and in no other ("et non aliter") the fourth variety of *paniculus* is cured.

Our author next proceeds to the discussion of three diseases which arise from an excess of phlegmatic humor ("ex abundantia humoris phlegmatici.") The first of these is inverted lids, which are due to an excessive lachrymal secretion. In taking this view of the etiology of the affection, Grassus places the cart before the horse, the excessive lachrymation so characteristic of inversion of the lids being manifestly a consequence of the latter and not its cause. Grassus condemns the practice of extracting the eyelashes in cases of inverted lids, which, while undoubtedly palliative aggravates the disease. Where one hair is removed four return and each of them thicker ("ac si forent pilli pororum") than its predecessor. The treatment of inverted lids is carried out in the following manner. Two needles are passed through the skin of the upper eyelid and are then fastened by threads wound about them. They are left *in situ* until they fall with the piece of included integument. In this manner Grassus claims to have cured many patients and to have received much money therefor. "Cum isto modo curæ multos homines sanavimus a quibus multas pecunias lucrati sumus."

The second disease caused by an excess of phlegmatic humor is *pannus vitreatus* in which the eyes appear cloudy, pustulous, and full of minute veins. This is treated by cauterizing the summit of the shaved head and the temples. Then the Alexandrine powder is placed in the eyes and the patient is twice purged "cum nostris pillulis hierosolimitanis."

The third disease arising from excess of phlegmatic humor is a "fleshy" state of the entire eye ("quanto oculus est toutus carnosus.") It is probable that this condition of "carnosity" is an advanced stage of *pannus*. It is treated with various powders, ointments and plasters, and by incisions with a razor, care being taken not to cut through the *tunica salvatrix*, in other words, not to penetrate into the cavity of the eye.

De scabie oculorum.

This chapter is undoubtedly descriptive of granular lids, the

granulations being described as seated beneath the upper lids and having the appearance of millet seeds. A preliminary constitutional treatment is advised, the remedies being chiefly purgative. The granulations are then to be scraped off "cum manibus et cum ferro," and this procedure is followed by the application of soothing ointments. According to Grassus, *scabies oculorum* was very prevalent in his time among the Saracens.

Two diseases arising from excess of bile are next described. The first is called *caligo oculorum* which, freely translated, means "dimness of vision." The eyes are said to be very painful but to present no external signs of disease. Grassus declares that when the eyes appear clear, no collyrium or powder is of the slightest use. Internal treatment is alone efficacious and consists chiefly of an elaborate decoction containing rhubarb, sandalwood, fennel, parsley and many other substances unfamiliar to the writer. By this method Grassus claims to have cured innumerable patients. If he is describing acute glaucoma, as would appear to be the case, his statements as the efficacy of treatment by the above mentioned means must be received with scepticism. On the other hand, Grassus, if he were with us, might well argue that no ophthalmologist of the present day has treated glaucoma after his method and, therefore, is not competent to judge of it.

The second malady due to an excess of bile is characterized by the appearance of a cloud before the pupil, and it is difficult to make out from the description whether the cloud is subjective or objective. As the treatment is entirely local, an objective cloud is probably intended. The chief remedies are powdered sapphire applied to the eye and a gum made of fennel and *pulvis nabetis* to which marvelous properties are attributed. According to Grassus, this gum was believed by the ancients, including Hippocrates and Galen, to be so potent that, if held in the hand, the hand itself would see! ("Si in manu teneatur, deberet manus videre.")

Three affections which are caused by melancholy humor ("ex humore melancholico") are next discussed. The first of them has for its principal symptom "muscas volantes." In its treatment local remedies are not to be employed, but extraordinary efficacy is attributed to a complex electuary containing fennel seeds, nutmeg, mastic, cinnamon and various other substances the names of which are now obsolete. This, Grassus calls the

"electuarium clarificatum oculorum," and he believes that it clarifies the light of the eyes and vivifies the visible spirit.

The second disease caused by melancholy humor is, possibly, what we nowadays call Graves's disease, Basedow's disease, Parry's disease, or, best of all perhaps, exophthalmic goitre. His description of it, however, is not sufficiently precise to warrant me in suggesting that it be called Grassus's disease. He speaks of it as an affection in which the eyes swell enormously and sometimes make their exit from the orbital cavity ("de secunda infirmitate quæ est quando oculi tumefiunt ultra modum et aliquantulum exirent concavite.") He says nothing, however, concerning coincident goitre or tachycardia, and describes the affection as coming on suddenly with great pain, and as being sometimes attended with loss of vision. He also states that it is readily amenable to treatment, which consists of a very compound cathartic pill and an ointment composed of sour apples ("poma acerba") and white of egg.

The third disease produced by melancholy humor is called "ungula in oculo" and is what we now call pterygium. The description of the growth of the *ungula* outwards from the inner canthus toward the pupil is accurate and the operative measures recommended for its removal are such as are practiced at the present day with the exception of the suturing of the conjunctiva, concerning which nothing is said.

In addition to the above diseases, Grassus treats of injuries to the eye from blows, foreign bodies and the bites of venomous animals, but in the foregoing review there is probably sufficient to give an idea of the state of ophthalmological science in the fifteenth century.

We have no statistics of Grassus's cataract extractions but he probably met with a fair measure of success. In this connection I may refer to a case of cataract of which there is a brief account in Prescott's "History of Ferdinand and Isabella." The patient was John II. of Aragon, the father of Ferdinand, upon whom the operation of "couching" was performed by a Hebrew physician of Lerida in 1469. "As the Jew, after the fashion of the Arabs, debased his real science with astrology, he refused to operate on the other eye since the planets, he said, wore a malignant aspect. But John's rugged nature was insensible to the superstitions of his age, and he compelled the physician to repeat his experiment which, in the end, proved perfectly successful. At the time of the operation the king was in his seventy-third year."



